

Notice of Allowability**Application No.**

10/823,895

Applicant(s)

ROTHMAN ET AL.

Examiner

JAE U. YU

Art Unit

2185

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to appeal brief 12/14/2009.
2. ☒ The allowed claim(s) is/are 1,2,4,5,8-11,13,14,17-19,21-24,26,27,30 and 31.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying Indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date ____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 2/24/2010.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other ____.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with David Victor (39,867) on 2/24/2010.

The application has been amended as follows:

As per **claim 1**:

A method, comprising:

- receiving an I/O request to write an update to an object in storage;
 - determining whether an amount of fragmentation of the object in the storage exceeds a fragmentation threshold indicating an acceptable number of bytes stored in non-contiguous locations in response to receiving the I/O request;
 - determining at least one logical partition including the object;
 - determining whether the object is read-only;
 - if the object is not read-only and if the object is within one logical partition,
- defragmenting the object in storage so that blocks in storage including the object are contiguous in response to receiving the I/O request to write the update to the object, wherein the request to write the update to the object causes the defragmentation operation; and
- executing the I/O request to write the update to the object in storage without defragmenting the object in response to determining at least one of that the object is included in more than one logical partition, that the object is read-only, and that the amount of fragmentation does not exceed the fragmentation threshold.

As per **claim 10**:

A system in communication with storage, comprising:
circuitry enabled to:

receive an I/O request to write an update to an object in the storage;
determining whether an amount of fragmentation of the object in the storage exceeds a fragmentation threshold indicating an acceptable number of bytes stored in non-contiguous locations in response to receiving the I/O request;
determining at least one logical partition including the object;
determining whether the object is read-only;
if the object is not read-only and if the object is within one logical partition,
defragment the object in storage so that blocks in storage including the object are contiguous in response to receiving the I/O request to write the update to the object, wherein the request to write the update to the object causes the defragmentation operation; and
execute the I/O request to write the update to the object in storage without defragmenting the object in response to determining at least one of that the object is included in more than one logical partition, that the object is read-only, and that the amount of fragmentation does not exceed the fragmentation threshold.

As per **claim 19**:

A system, comprising:

storage;

a storage controller coupled to the storage, wherein the storage controller is enabled to:

receive an I/O request to write an update to an object in the storage;
determining whether an amount of fragmentation of the object in the storage exceeds a fragmentation threshold indicating an acceptable number of bytes stored in non-contiguous locations in response to receiving the I/O request;

determining at least one logical partition including the object;

determining whether the object is read-only;

if the object is not read-only and if the object is within one logical partition,

defragment the object in storage so that blocks in storage including the object are contiguous in response to receiving the I/O request to write the update to the object, wherein the request to write the update to the object causes the defragmentation operation; and

execute the I/O request to write the update the object in storage without defragmenting the object in response to determining at least one of that the object is included in more than one logical partition, that the object is read-only, and that the amount of fragmentation does not exceed the fragmentation threshold.

As per **claim 23**:

An article of manufacture comprising at least one of a computer readable storage medium having code executed by a processor and a hardware device having logic to communicate with a storage and perform operations, the operations comprising:

receive an I/O request to write an update to an object in storage;

determining whether an amount of fragmentation of the object in the storage exceeds a fragmentation threshold indicating an acceptable number of bytes stored in non-contiguous locations in response to receiving the I/O request;

determining at least one logical partition including the object;

determining whether the object is read-only;

if the object is not read-only and if the object is within one logical partition,

defragment the object in storage so that blocks in storage including the object are contiguous in response to receiving the I/O request to write the update to the object, wherein the request to write the update to the object causes the defragmentation operation; and

execute the I/O request to write the update to the object in storage without defragmenting the object in response to determining at least one of that the object is

included in more than one logical partition, that the object is read-only, and that the amount of fragmentation does not exceed the fragmentation threshold.

As per **claims 32-34**:
(Cancelled)

Conclusion

A. Subject Matter Considered Allowable

Claims 1, 2, 4, 5, 8-11, 13, 14, 17-19, 21-24, 26, 27, 30 and 31 are allowable.

The primary reasons for allowance of **independent claims 1, 10, 19 and 23** in the instant application is the combination with the inclusion in these claims that **"if the object is not read-only and if the object is within one logical partition, defragmenting the object in storage so that blocks in storage including the object are contiguous in response to receiving the I/O request to write the update to the object, wherein the request to write the update to the object causes the defragmentation operation; and executing the I/O request to write the update to the object in storage without defragmenting the object in response to determining at least one of that the object is included in more than one logical partition, that the object is read-only, and that the amount of fragmentation does not exceed the fragmentation threshold"**. The prior art of record neither anticipates nor renders obvious the above recited combination. The remaining claims depend either directly or indirectly on the allowed claims 1, 10, 19 and 23, and are allowable for the same reasons.

As allowable subject matter has been indicated, applicant's response must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 C.F.R. § 1.111(b) and § 707.07(a) of the MPEP.

B. Direction of Future Remarks

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jae Un Yu who is normally available from 9:00 A.M. to 5:30 P.M. Monday thru Friday and can be reached at the following telephone number: (571) 272-1133.

If attempts to reach the above noted examiner by telephone are unsuccessful, the Examiner's supervisor, Sanjiv Shah, can be reached at the following telephone number: (571) 272-4098.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jae U Yu/

Examiner, Art Unit 2185

/Sanjiv Shah/

Supervisory Patent Examiner, Art Unit 2185